Crompton GmbH

CLAIMS

1. Catalytic composition for esterification, transesterification and polycondensation reactions of dicarboxylic acids, polycarboxylic acids and/or hydroxy carboxylic acids and alcohols containing tin compounds of the general formula (I):

$[(R^1Sn)_l(OH)_{m-n}(OR^2)_nO_o]^{p+}\ A^{q-}_{p/q}$ (formula I)

wherein:
R^1 and R^2 each independently is a linear, branched or cyclic alkyl group or aryl group having 1 to 12 carbon atoms,
A^{q-} is an anion,
l = 12,
m = 6,
n = 0 to 6,
o = 14,
p = 2 and
q = 2.

2. Catalytic composition according to claim 1, characterized in that the anion A^{q-} is O^{2-}, $-OH^-$, a linear, branched or cyclic alkyl group, aryl carboxy group or alkoxy group each having 1 to 12 carbon atoms, the anion of a mineral acid or a metalate.

3. Catalytic composition according to claim 2 characterized in that the anion A^{q-} is a sulphate, sulphite, phosphate, halogenide or pseudo-halogenide, titanate, zirconate, aluminate or zincate anion.

4. Catalytic composition according to claim 1 characterized in that the anion A^{q-} is a chloride anion and R1 is an octyl- and/or butyl group.

5. Process for the preparation of a catalytic composition according to any one of claims 1 to 4 wherein n = 1 to 6 characterized by reacting tin compounds of the general formula (I) as to the definition in claim 1 with a metal alcoholate.

6. Process according to claim 5, characterized by using said metal alkoxide in a proportion of 1:0.0001 up to 1:20 by mole, in particular 1 : 4 to 1 : 6.

7. Process according to claim 7 or 8 characterized in that the resultant metal oxides, metal hydroxides and /or alkoxy metal hydroxides remain in the catalytic composition.

8. Use of the catalytic composition as defined in any one of claims 1 to 7 for the continuous or batchwise production of esters or polycondensation products by esterification, transesterification, polyesterification or polytransesterification reaction.

9. Use according to claim 7 including a polyesterification reaction of a dicarboxylic acid derivative with a mono, divalent or polyvalent alcohol.

10. Use according to any one of claims 7 to 9, characterized by employing derivatives of di, or polycarboxylic acids being selected from the group of esters or halogenides.

11. Use according to claims 7 to 10, characterized by employing derivatives of hydroxycarboxylic acids being selected from esters.

12. Use according to anyone of claim 7 to 11, characterized by employing a metal concentration of said catalytic composition being in the range of 0.1 ppm to 1 mole-%, in particular 10-100 ppm with reference to the acid or derivative to be reacted.

13. Use according to any one of claims 7 to 12, characterized by employing a solvent or suspending agent for the manufacturing of the catalytic composition and/or said esterification, transesterification, polyesterification or polytransesterification reaction.

14. Use according to claim 13, characterized by employing the same solvent and/or suspending agent the manufacturing of said catalytic composition and said esterification, transesterification, polyesterification or polytransesterification reaction.

15. Use according to claim 13 or 14, characterized by employing a solvent or suspending agent being selected from the group of mono-, di- or polyvalent alcohols being reacted in said esterification, transesterification, polyesterification or polytransesterification reaction.

16. Polyester for bottles, films, foils, yarn and/or molded padding, or resins for powder coatings or technical synthetic materials, obtainable by a process employing a catalytic composition as defined in any one of claims 1 to 4 in a use according to any one of claims 8 to 15.

17. Polyester or resins according to claim 16, wherein said polyester is selected from the group of polyethylene terephthalate, poly-2,2-dimethylpropyl-1,3-terephthalate, polypropylene terephthalate, polydiethyleneglycol terephthalate, polybutylene terephthalate, polynaphthalene terephthalate, or polyethylene naphthalate.